KIPOR

KIPOR POWER

OPERATION MANUAL

PLEASE READ THIS MANUAL CAREFULLY.
IT CONTAINS IMPORTANT SAFETY INFORMATION.

WWW.KIPOR.COM

KIPOR

WUXI KIPOR POWER CO., LTD.
Address: Beside Jingyi Rd, Third-stage Development Section
of Wangzhuang Industry Area, Wuxi High &
New Technology Industry Development Zone.
TEL: 0086-510-85200888
FAX: 0086-510-85200999
E-MAIL: kipor@kipor.com

Coast Distribution System Inc.
Email:kiporcare@coastdist.com
Phone: 877-544-4449

DIESEL GENERATOR

KDE5000E
KDE5000TA

Version 5, Printing date 28/10/2006, Coast MADE IN CHINA

PREFACE

Thank you for purchasing a Kipor generator through the Coast Distribution System.

This manual covers the operation and preventive maintenance of the KDE5000E and KDE5000TA generator sets. This manual is primarily concerned with the generator specifications, function, troubleshooting and repair. There is a separate manual to cover the KM186FA engine.

All information in this publication is based on the latest product information available at the time of approval for printing.

No part of this publication may be reproduced without written permission.

If a problem should arise or if you have any questions about the generator, consult an authorized Kipor service center

Our generators are designed to give safe and dependable service if operated according to instructions. Read and understand the operation manual before operating the generator. Failure to do so could result in personal injury or equipment damage.

Several preventive maintenance procedures require background knowledge in diesel engines. Be sure to consult an authorized service center when necessary. Coast Distribution will maintain a service manual and parts breakdown on its website to guide the technician. Go to www.coastdistribution.com for more information.

SAFETY INFORMATION

WARNING!

Failure to properly follow these precautions can result in property damage, serious injury or DEATH!

■ Read all labels and the owner's manual before operating this generator.

■ Operate only in well ventilated areas. Exhaust gas contains carbon monoxide, a poisonous, colorless, odorless gas and can be deadly.

■ Always stop the engine before refueling. Wait 5 minutes before restarting.

■ Check for spilled fuel or leaks. Clean and/or repair before use.

■ Keep any source of combustion away from fuel tank at all times.

■ Do not operate near flammable materials or in an explosive atmosphere.

■ Do not operate this unit in wet conditions or with wet hands. Use of a generator in rain, snow or near water can result in electrocution.

■ Keep the generator dry at all times.

■ Connections for standby power to a building's electrical system must be made by a qualified electrician and must comply with all applicable laws and electrical codes. Improper connections can allow electrical current from the generator to back feed into the utility lines. Such back feed may electrocute utility company workers or others who contact the lines during a power outage, and when utility power is restored, the generator may explode, burn, or cause fires in the building’s electrical system.

WARNING!

1. TO PREVENT FIRE

Never add fuel to the fuel tank while the engine is running.

Wipe off any overflowed diesel fuel with a clean cloth. Keep explosives and other flammable products away from the generator set.

■ To prevent fire and to provide adequate ventilation, keep the generator at least three feet (one meter) away from buildings and other equipment during operation.

■ Operate the generating set on a level surface.

■ Do not put the generating set indoors while the engine is hot.

2. TO PREVENT EXHAUST INHALATION

Exhaust gas contains poisonous carbon monoxide which is harmful to your

health and possibly fatal. Never use the generating set in confined spaces or poorly ventilated areas.

3. AVOID BURN INJURIES

The muffler and the engine body are very hot while the engine is running or just after running. Do not touch these parts to prevent from being severely burned.

4. ELECTRIC SHOCKS

To avoid electric shocks or short circuits, do not touch the generating set when your hands are wet. This generating set is not waterproof so it should not be used in a place exposed to rain, snow or water spray. Use of the generator in a wet place can cause short circuits and electrical shocks during operation.

- The generating set should be grounded to prevent electrical shocks from faulty appliances. Connect a length of heavy wire between the generator set ground terminal (on the control panel) and an external ground source.
- Do not hook up tools or other appliances to the generator before it has been started. If equipment is plugged in and the circuit breakers on, the generator starting motion may cause sudden movements of the equipment and possibly result in injuries. Be sure to disconnect any tool or appliance from the generator prior to starting.

CAUTION
■ Most appliance motors require more than their rated current for start-up. ■ Do not exceed the specified current limit of any receptacle. ■ Do not connect the generating set to a household circuit. This could cause damage to the generating set and to electrical appliances in the house.

5. WHEN CHARGING THE BATTERY

Your generator is equipped with a maintenance free battery. Leakage of battery electrolyte is possible if the case is penetrated. Battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and get prompt medical attention. Batteries generate hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near a battery at any time. Charge the battery only in a well ventilated area.

CONTENTS

1. Specifications 1
2. Component Identification 2
3. Preparation for Starting 7
4. Starting the Generator 11
5. Operating the Generator 13
6. Stopping the Generator 15
7. Periodic Maintenance 16
8. Short-term storage and maintenance 18
9. Long-term Storage 19
10. Troubleshooting and Repair 20
11. Wiring Diagrams 22
12. Warranty 24

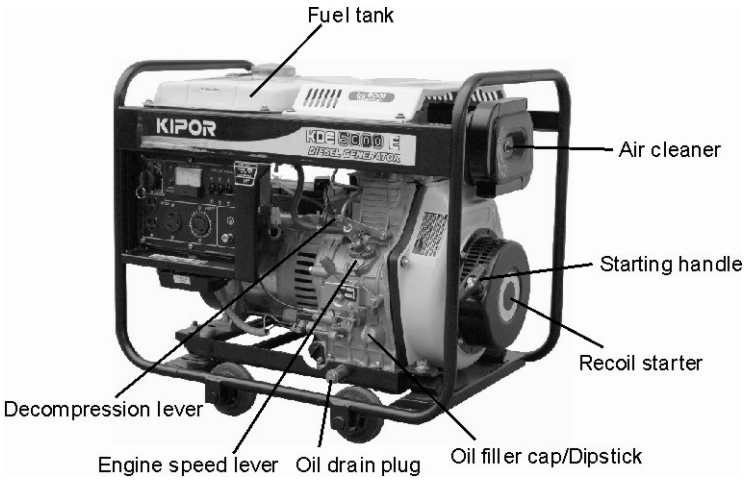
1. MAIN TECHNICAL SPECIFICATIONS AND DATA

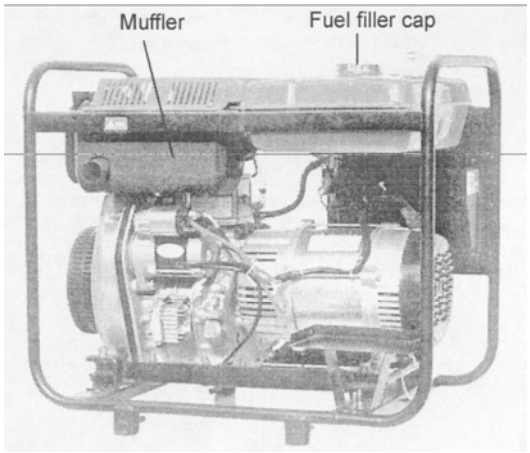
Item \ Model		KDE5000E	KDE5000TA
Generating set	Rated frequency (Hz)	60	60
	Max power (kVA)	5.0	5.0
	Rated power (kVA)	4.5	4.5
	Rated voltage (AC)	120/240	120/240
	Rated current (AC)	37.5/18.8	37.5/18.8
	Rated speed (rpm)	3600	3600
	Phase	single phase	
	Power factor	1.0	
	Excitation mode	self excitation constant voltage(AVR)	
	Structure mode	Open Frame	Sound Attenuating Enclosure
	Gross weight lbs. (kg)	201 (95)	376 (171)
	Dimensions (LxWxH) in (mm)	28.4x18.9x33.3 (720x480x845)	35.8x20.5x29.1 (910x520x740)

Item \ Model		KDE5000E	KDE5000TA
Engine	Model	KM186FAG	
	Type	4-stroke, single-cylinder, air-cooled, direct injection diesel engine	
	Continuous output(kW/rpm)	6.3	6.3
	Max. Power (kW /rpm)	6.6	6.6
	Bore x stroke in. (mm)	3.39x2.83 (86x72)	
	Displacement cu in. (cc)	25.5 (418)	
	Cooling system	Forced air-cooled system	
	Lubricating system	Pressure splash	
	Lube oil capacity qt.(L)	1.45 (1.65)	
	Starting system	recoil/electric	electric
	Fuel	Diesel	
	Fuel capacity gal. (L)	3.96 (15)	4.23 (16)
	Low oil pressure alarm	with	

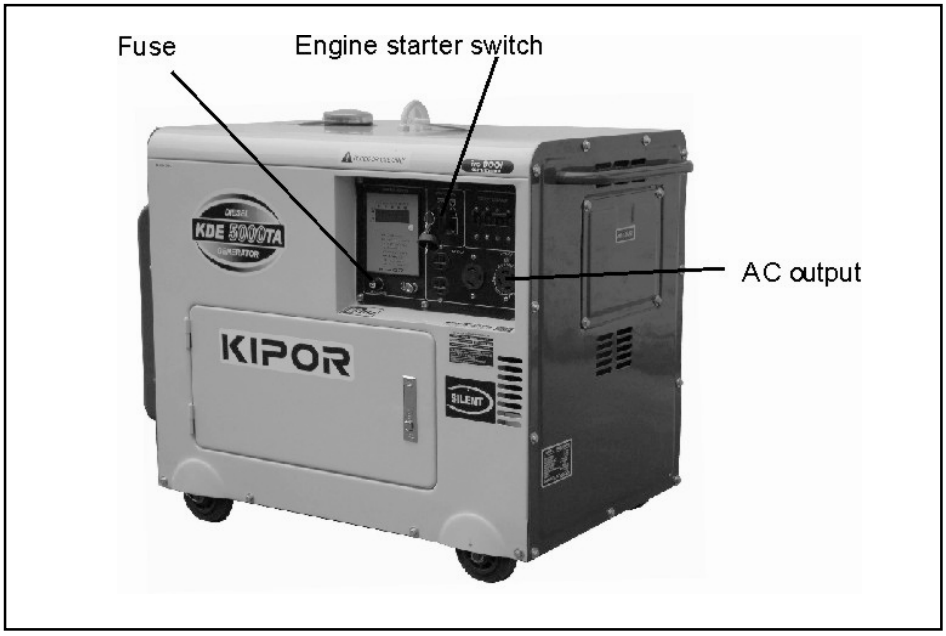
2. COMPONENT IDENTIFICATION

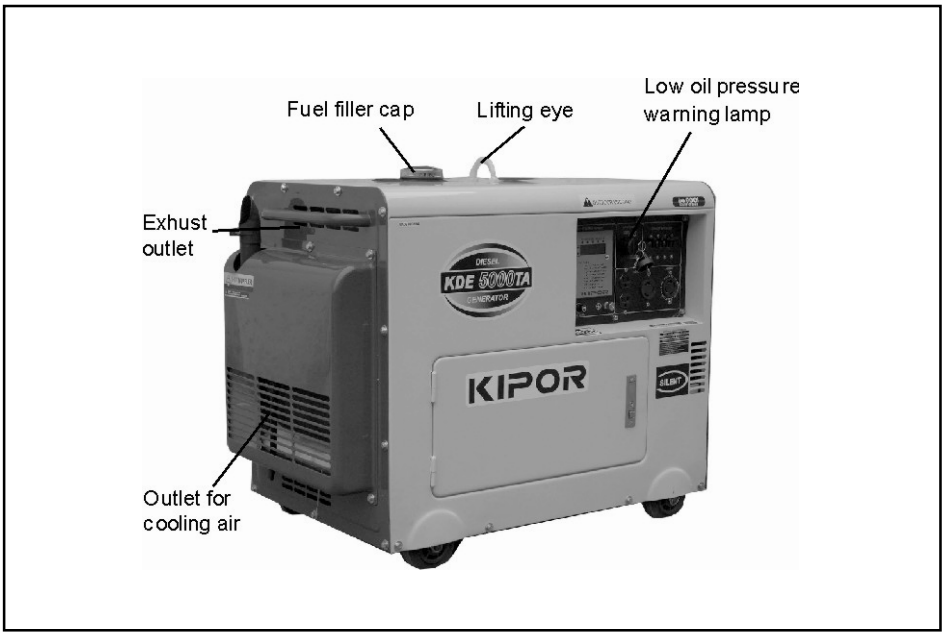
2.1 Component Location KDE5000E





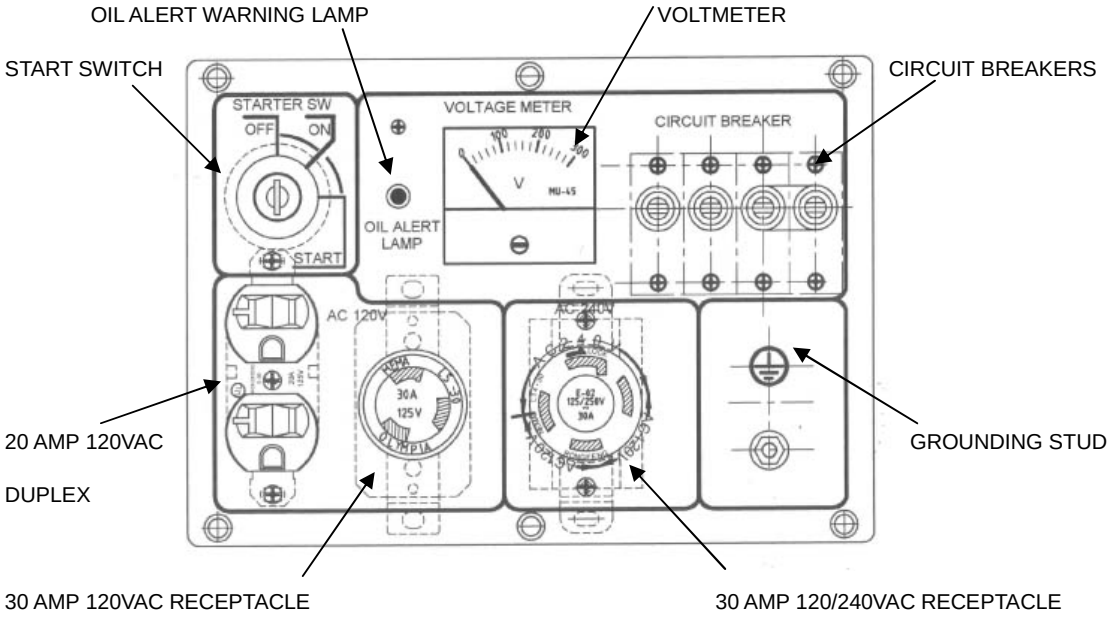
2.2 Component Location KDE5000TA



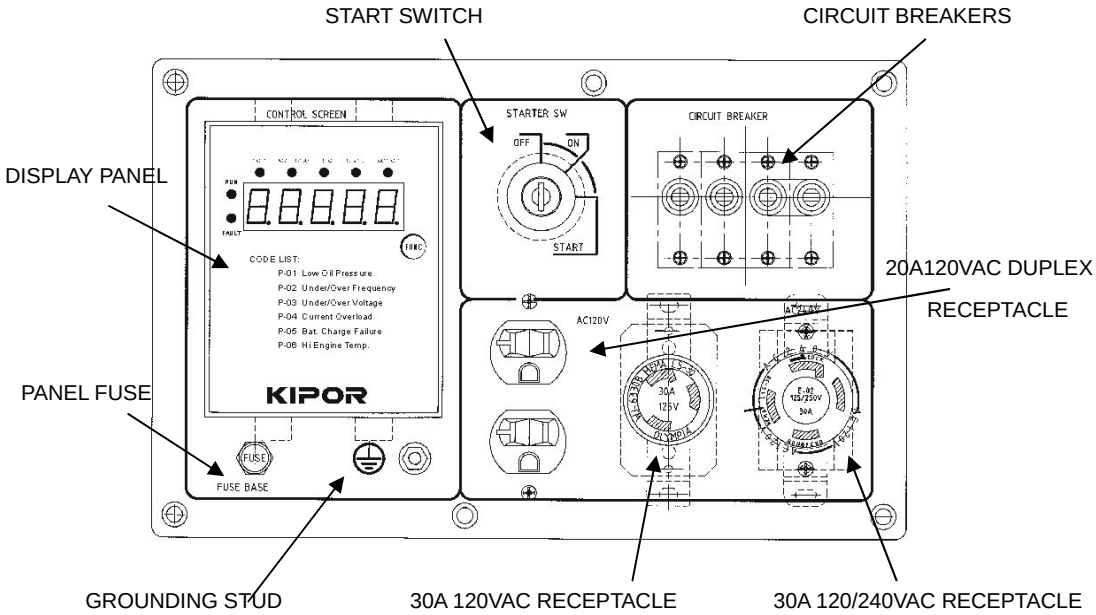


2.3 Control panel

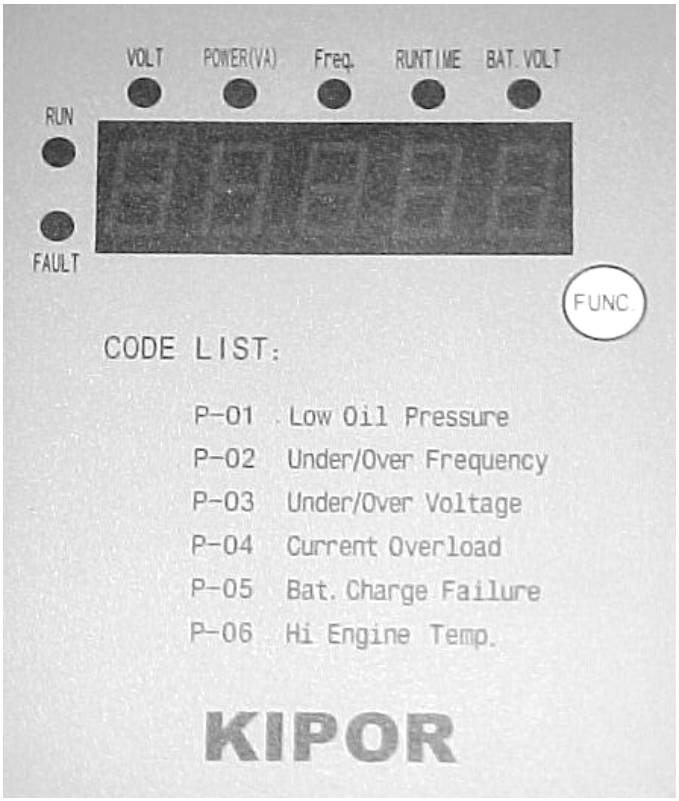
KGE5000E



KGE5000TA



2.4 KDE5000TA Digital Display Panel Operation



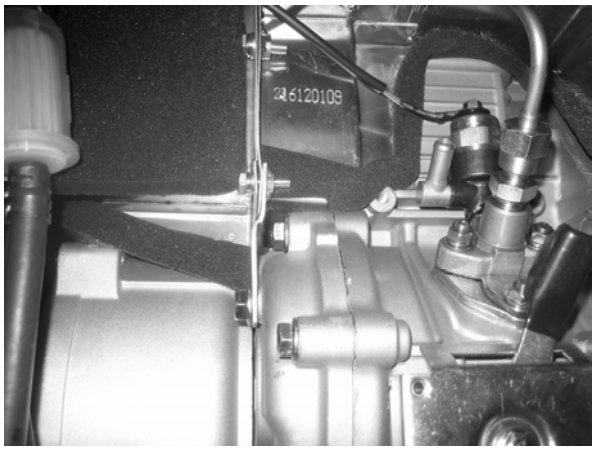
The panel is designed to give the operator precise information regarding generator operation and current loads. Additionally, should the generator experience a condition necessitating shutdown, a fault code appears on the screen.

When running, the green “RUN” light should be illuminated. Press the function “FUNC” button to change the display. A green light should appear above the digital readout to indicate the current function. You have a choice of voltage (120 or 240), power (VA), Frequency (HZ), total runtime in hours, and starting battery voltage.

Fault codes are explained in the troubleshooting section.

2.5 Serial number and bar code identification and location

The generator serial number identifies your particular unit and is important when ordering parts and accessories. The bar code is used by your dealer and Coast Distribution for warranty administration.



The serial number for the KDE5000TA is located on the air inlet plate to the left of the diesel injection pump.

The serial number for the KGE5000E can be found on a stainless steel shroud surrounding the alternator to the right of the engine.

The bar code is found in three locations: on the generator, on the packing crate or carton, and on the inside cover of the operator's manual.

3. PREPARATION FOR STARTING

3.1 Selection and handling of diesel fuel

■ Selection of diesel fuel

Diesel #2 is the most suitable for the engine. A Cetane rating of 40-42 is recommended at temperatures above 32°F (0°C). A Cetane rating of 45 is recommended at temperatures below 32°F (0°C). Winter fuels are often blended by refineries so for optimum performance, don't use stored winter fuel in warmer weather.

■ Keep dust and water out of the fuel

When filling the fuel tank from drums, make sure that no dust or water is mixed in the fuel. Serious fuel injection pump and injector problems will result.

■ Do not overfill

Overfilling is very dangerous. Do not fill the tank beyond the top of the red plug inside the fuel strainer.

■ Below 15 degrees F, wax crystals begin to form in diesel fuel. These will clog the fuel filter and stop the engine as the temperature drops toward 0 F. Any good "winter fuel conditioner" for diesel fuel will keep the fuel moving to at least -20 degrees. Follow the manufacturer's instructions.

WARNING
■ Refuel in a well-ventilated area with the engine stopped. ■ Do not smoke or allow flames or sparks in the area where the engine is refueled or where the fuel oil stored. ■ Do not overfill the tank; make sure the filler cap is securely closed after refueling. ■ Be careful not to spill fuel when refueling. If any fuel is spilled, make sure the area is dry before starting the engine.

3.2 Check and refill the engine oil

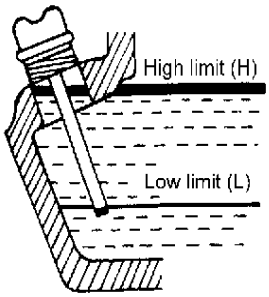
WARNING
■ Always check the engine oil level with the generator on a level surface before starting and refill if necessary. ■ The engine may be damaged if operated with insufficient engine oil; it is also dangerous to overfill the oil level.

CAUTION:

KIPOR KDE series generators are equipped with a low oil pressure warning and shutdown system. This system stops the engine automatically when the oil pressure falls below a safe level and prevents catastrophic engine failure. Do not operate the generator with this system disabled.

■ Check the oil level

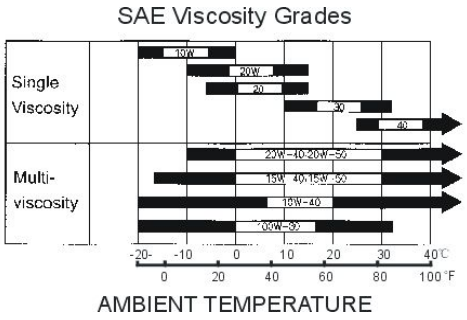
Take out the oil filler cap and clean the indicator stick with a clean lint free rag. Reinsert the oil filler cap without rotating it. Remove the oil filler cap and examine the oil level. If the oil level is at or below the lower level, refill the oil to the upper limit mark. Reinsert the oil filler cap and tighten securely. The oil capacity of the engine is 1.45 qt. (1.65 L)



■ Engine Oil Selection

It is very important to select the proper engine oil to maintain good performance and life of the generator. If an inferior engine oil or oil of the wrong grade is used or if your engine oil is not replaced periodically, the risk of

piston seizure, piston ring sticking and accelerated wear of the cylinder liner, bearings and other moving parts increases significantly and the life of the generator is shortened. KIPOR recommends an API classification of CD, CC, CF-2, CG-4, SJ. Choose the applicable viscosity oil according to local ambient temperature.

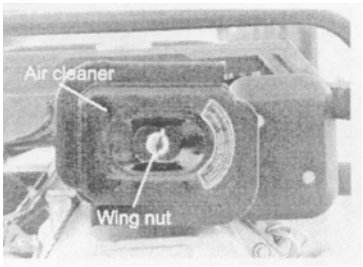


3.3 Connect the Battery

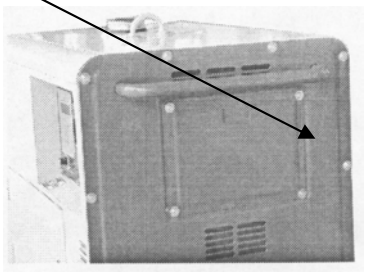
To connect the battery, first connect the positive (red) cable to the positive (+) post of the battery. Use the fasteners provided and ensure the connection is secure. Next connect the negative (black) cable securely to the negative (-) battery terminal.

Use the reverse order when disconnecting the battery.

3.4 Service the air cleaner



1. Unscrew the wing nut, remove the air cleaner cover and take out the element. (The KDE5000TA air cleaner can be accessed by removing the panel on the left side of the set.



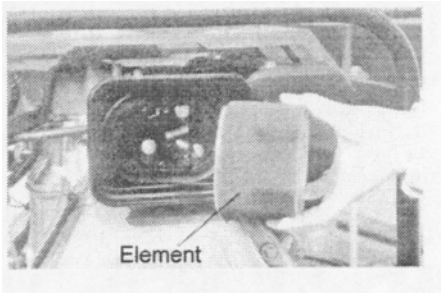
CAUTION:

■ Do not wash the element with detergent.

■ Replace the element when dirty or the paper is torn.

■ Never run the generating set without the element or rapid engine wear will result.

2. Reattach the air cleaner cover and tighten the wing securely,

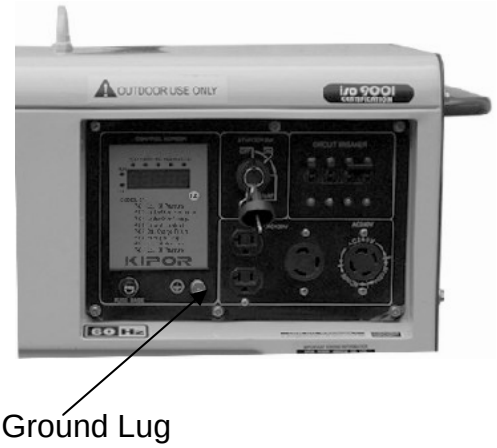


3.5 Check the generating set

1. Turn off all circuit breakers and disconnect any loads.

WARNING

■ The generator should be grounded to prevent electric shocks.



3.6 Break-in period

The first 20 hours are considered a break-in period for the engine. Please observe the following instructions:

■ Warm up the engine 5 minutes upon the initial start. Run the engine with no load until the engine becomes warm.

■ Avoid applying any heavy loads during the break-in period. No more than a 50% load (2500 watts) is recommended.

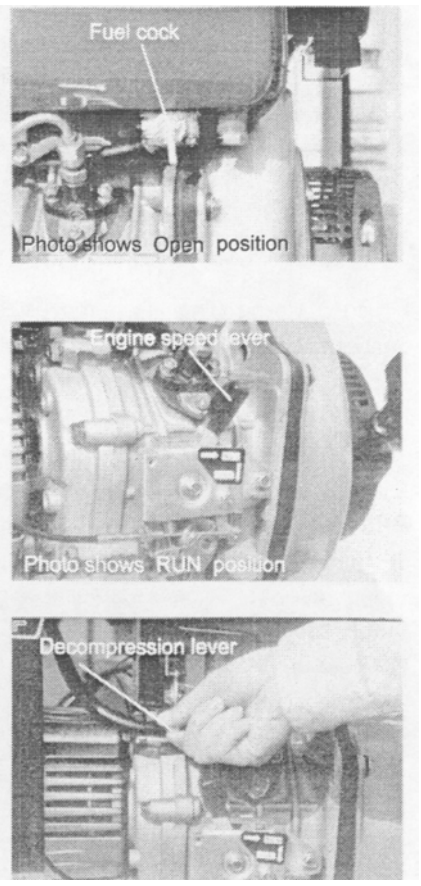
■ Replace the engine oil while the engine is warm after the initial 20 hour run time.

4. STARTING THE GENERATOR

WARNING
■ Do not plug in any tools or appliances into the generator before starting.

4.1 Recoil starting (KDE5000E)

Start the engine according to the following procedures:



1. Open the fuel cock.

2. Set the engine speed lever at the RUN position.

3. Pull out the recoil starter handle.

■ Pull out the handle until you feel the resistance then return it back to the initial position.

■ Press down the decompression lever. It will return automatically when the recoil starter is pulled.

■ Firmly pull the recoil starter handle

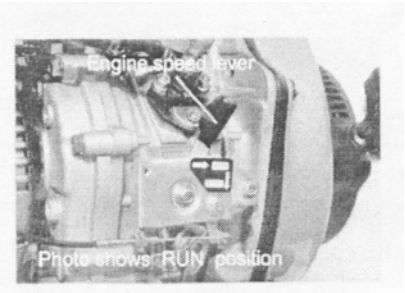
CAUTION
■ Do not allow the handle grip to snap back against the engine. Return it gently to prevent damage to the starter mechanism. ■ When the engine is difficult to start in cold weather, remove the screw plug from the cylinder head cover and add 2cc engine oil. Be sure to replace the plug to prevent moisture and dirt from entering the engine. ■ The use of aerosol starting fluids is prohibited. Severe piston damage may result.

4.2 Electric starting

1. Starting (The preparations for electric starting are the same as for the recoil starting.)

■ Open the fuel cock.

■ Set the engine speed lever at the "RUN" position.



■ Turn the starting key clockwise to "START" position.

Remove your hand from the key as soon as the engine starts.

If the starting motor does not start after 10 seconds, wait 15 seconds before starting it again.

5. OPERATING THE GENERATOR

5.1 Operate the generator

Warm up the engine without load for three minutes.

5.2 Check while running

1. Abnormal sound or vibration;
2. Engine misfiring or rough running
3. Heavy exhaust smoke especially blue or black.

If you notice any of the above-mentioned conditions, stop the engine and correct the problems before running the generator.

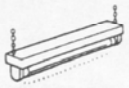
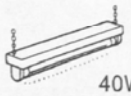
5.3 AC application

1. After switching on the circuit beakers, observe the voltmeter on the control panel or digital display. Do not operate the generator if a reading other than 120 ± 5 volts is observed. The KDE5000TA will automatically shutdown on an over or under voltage.
2. Connect the equipment to the generating set in order i.e. the appliances with the highest current load first.

CAUTION
■If overloading of the circuit trips an AC circuit breaker, reduce the electrical load on the circuit and wait a few minutes before resuming operation.

3. The generator is designed to permit simultaneous 120 and 240 volt operation.

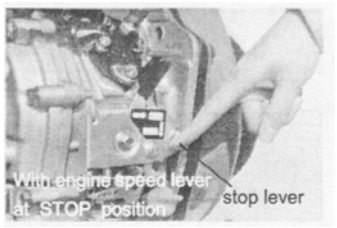
5.4 Electrical appliances particularly motor-driven equipment will product very high current while starting. The following table provides a reference for connecting these appliances to the generator.

TYPE	WATTAGE		TYPICAL APPLIANCE	EXAMPLE		
	STARTING	RATED		APPLIANCE	STARTING	RATED
· Incandescent lamp · Heating appliance	X1	X1	Incandescent lamp TV	Incandescent lamp 100W	100VA (W)	100VA (W)
· Fluorescent lamp	X2	X1.5	 Fluorescent lamp	 40W Fluorescent lamp	80VA (W)	60VA (W)
· Motor-driven equipment	X3~5	X2	Refrigerator Electric fan	Refrigerator 150W	450-750VA (W)	300VA

6. STOPPING THE GENERATOR

1. Disconnect all loads.
2. Turn off all circuit breakers.
3. Run the generating set without load for 3 minutes.

Do not stop the engine suddenly or the temperature will increase abnormally



- ■ Press down on the stop lever.
- ■ Turn the key to "OFF".
- ■ Place the fuel cock lever to "S" position.

WARNING
■ If the engine keeps on running after the speed lever is placed in the "STOP" position, turn the fuel cock to the "CLOSE" position. ■ Do not stop the engine with the decompression lever. ■ Do not stop the generating set with load applied. Stop it after the load removed.

7. PERIODIC MAINTENANCE

Periodic maintenance is very important to keep the generator in optimum running condition. The chart below indicates what checks and adjustments are necessary and at what interval.

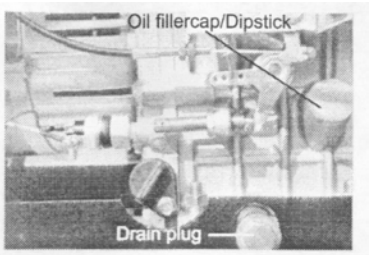
Interval / Item	Daily	First 20 Hours	100 hours or three months	500 hours or six months	1000 hours of every year
Check Battery and cables	○				
Check Fuel Level	○				
Check Oil Level	○				
Replace engine oil		○	○		
Check Air Filter Element	○				
Replace air cleaner element *				○	
Clean oil filter				○ (replace if necessary)	
Clean fuel filter				○	
Replace Fuel Filter					○
Check fuel injection pump					●
Check fuel injector					●
Check fuel lines				● (replace if necessary)	
Adjust valve clearance					●
Check carbon brush and slip rings					●

*service more frequently in dirty or dusty conditions

Note: "●" indicates special tools and/or knowledge required. Contact an authorized Kipor service center as necessary.

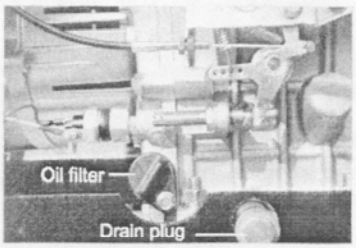
7.1 Changing the engine oil

Remove the oil filler cap. Remove the drain plug and drain the old oil while the engine is still warm. The plug is located on the bottom of the cylinder block. Tighten the drain plug and refill with the recommended oil.



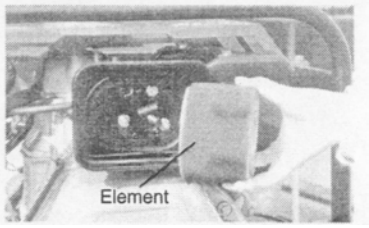
7.2 Clean the engine oil filter

	Every 6 months or 500 hours



7.3 Replace the air cleaner element

Do not clean the air cleaner element with detergent.



7.4 Clean and replace fuel filter

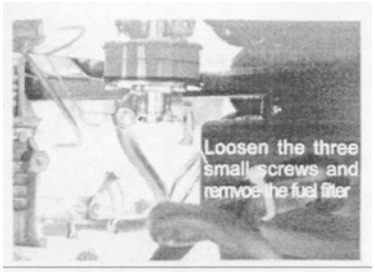
The fuel oil filter also has to be cleaned regularly to insure maximum engine output.

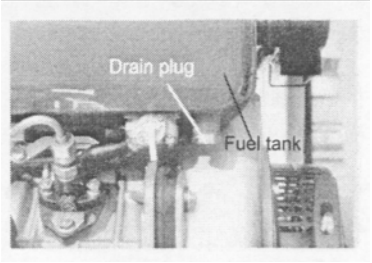
Clean	Every 6 months or 500 hours
Replace	Every year or 1000 hours

1. Drain out the fuel from the fuel tank.

Remove the small screw of the fuel cock and pull out the filter from the filler port.

3. Wash the filter thoroughly with diesel fuel. Loosen the fastening nut, bottom cover and delivery discs for cleaning any deposits.





7.5 Check the injection nozzle and fuel injection pump

Consult the service manual

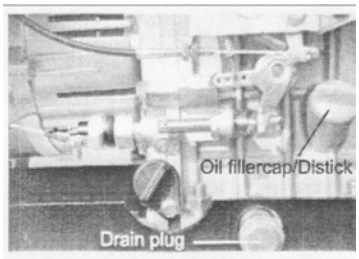
7.6 Check the generating set carbon brush and slip ring

Consult the service manual

8. SHORT-TERM STORAGE AND EXERCISE

1. Add oil to max level without overfilling.
2. Fill tank with fresh diesel fuel. Treat with a quality diesel fuel conditioner.
3.Exercise the generator every 30 days. Run it with at least a 50% load (2500 watts) for 30 minutes. This will serve to lubricate the injection pump and bake out any moisture that has accumulated in the generator windings.

9. LONG-TERM STORAGE



If storing the generator for periods exceeding 30 days, perform the following steps:

1. Operate the engine for about 3 minutes and then stop.
2. Drain the engine oil while the engine is warm and fill with fresh oil.
3. Remove the screw plug on the cylinder head cover and add 2cc of clean engine oil then replace the plug.
4. ■Recoil starting:

   Push the decompression lever down (Non-compression position) and hold it while you pull the recoil starter 2~3 times. (Do not start the engine.)

   ■Electric starting:

   Turn the engine 2~3 seconds with the decompression lever set at the non-compression position and the starting key at the "START" position. (Do not start the engine.)
5. Wipe off any oil and dirt from the engine and store in a dry place.

10. TROUBLESHOOTING AND REPAIRS

10.1 The diesel engine will not start or is difficult to start

Fault:	Remedy:
Deteriorated diesel fuel in the tank	Drain the tank and refuel with fresh diesel fuel
Fuel filter is clogged	Clean or replace fuel filter
Fuel Cock is not in the Start position.	Turn it to the START position
The governor lever of the engine throttle is not in the start position	Switch to the start position
Oil filter is clogged causing low oil pressure switch to activate	Clean or replace oil filter
Low oil pressure switch failure	Check wiring and replace switch as necessary
Air in the fuel lines (often occurs after running out of fuel)	Consult the service manual for bleeding procedure
Valves out of adjustment	Check valve adjustment and reset as necessary (refer to service manual)
Insufficient battery voltage to energize starter and/or fuel solenoid valve	Check battery state and terminals and cables

10.2 Engine speed is unstable, too high or too low

Fault:	Remedy:
Engine governor spring is defective	Replace governor spring
Valves out of adjustment	Check valve adjustment and reset as necessary (refer to service manual)
Governor out of adjustment	Adjust governor (refer to service manual)

10.3No AC output

Fault:	Remedy
Circuit Breakers closed	Open circuit breakers
Receptacle is defective	Check wiring and check or replace receptacle

10.4 No display (KDE5000TA)

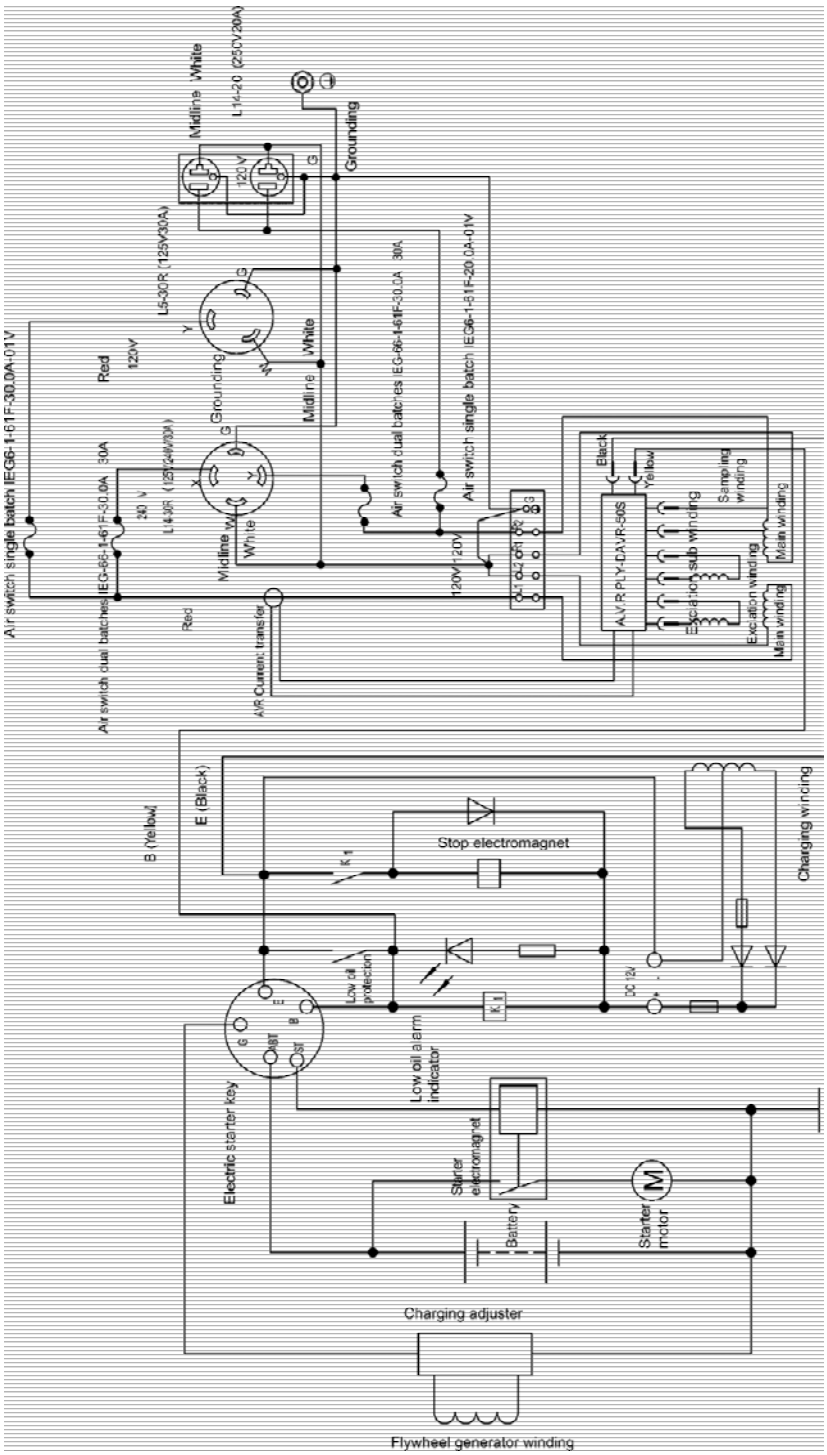
Fault:	Remedy:
No 12V power supply	Check control panel fuse Check for 12V DC to panel, check wiring continuity

10.5 KDE5000TA Digital Panel Faults:

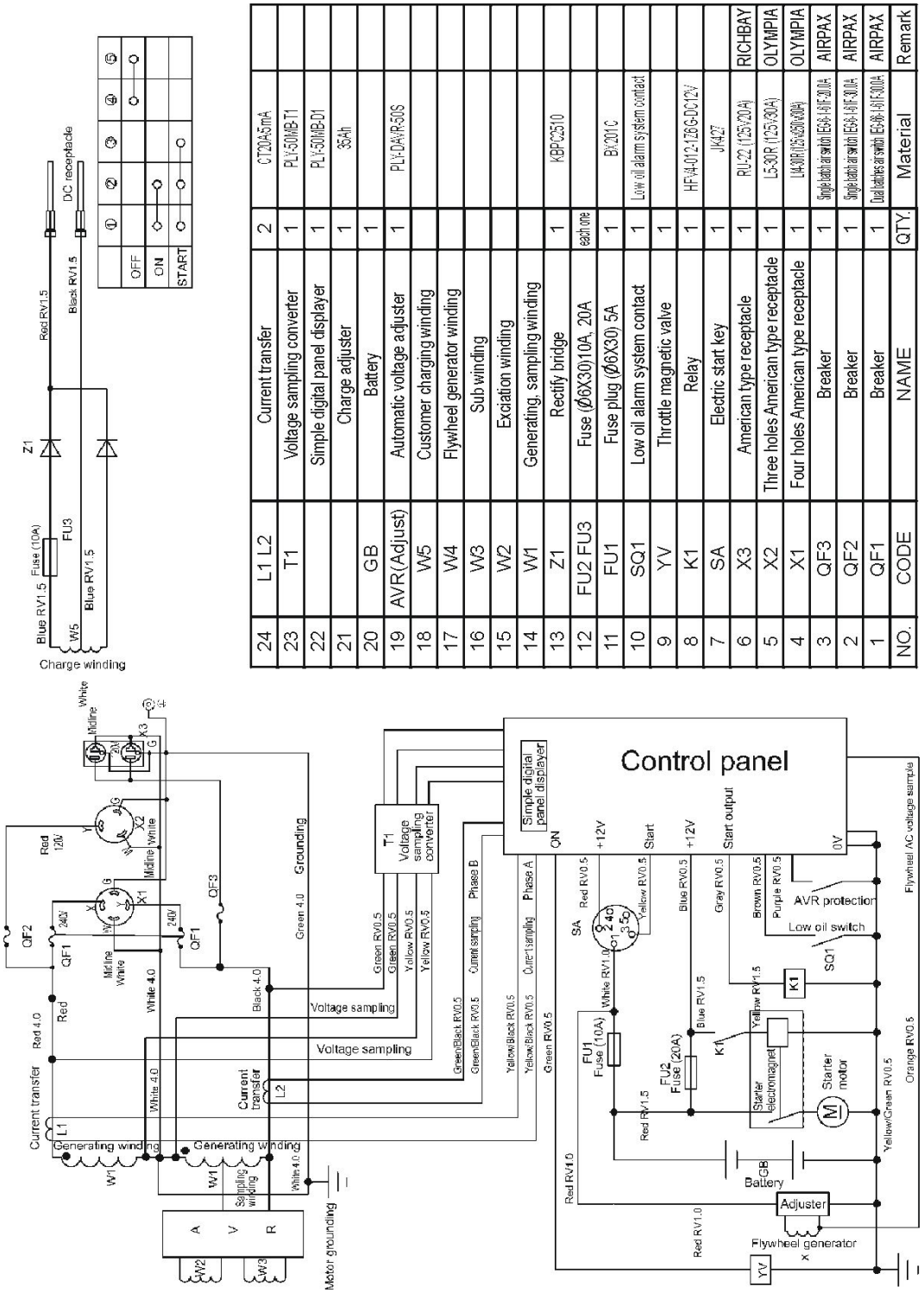
Fault	Possible Cause and Remedy
P-01 Low Oil Pressure	1. Low oil level- check and refill as necessary 2. Clogged oil filter- remove and clean/replace 3. Bad oil switch- test per service manual
P-02 Over/Under Frequency	Consult service manual
P-03 Over/Under Voltage	Consult service manual
P-04 Current Overload	1. Reduce the number of loads on the generator and restart 2. Check the appliance or tool for proper operation
P-05 Battery Charge Failure	1. Check battery and battery terminals and connections 2. Test charge adjuster per service manual
P-06 High Engine Temp	Not applicable to this generator

11. WIRING DIAGRAM

(1) E type electric wiring diagram (KDE5000E)



(2) TA type electric wiring diagram (KDE5000TA)



NO.	CODE	NAME	QTY.	Material	Remark
24					
23	L1 L2	Current transfer	2	CT20A/5mA	
22	T1	Voltage sampling converter	1	PLV-50MBT1	
21		Simple digital panel displayer	1	PLY-50MB-D1	
20	GB	Charge adjuster	1	35Ah	
19	AVR(Adjust)	Battery	1		
18	W5	Automatic voltage adjuster	1	PLV-DAVR-50S	
17	W4	Customer charging winding			
16	W3	Flywheel generator winding			
15	W2	Sub winding			
14	W1	Exciation winding			
13	Z1	Generating, sampling winding			
12	FU2 FU3	Rectify bridge	1	KBPC2510	
11	FU1	Fuse (Ø6X30)10A, 20A	each one		
10	SQ1	Fuse plug (Ø6X30) 5A	1	BV201C	
9	YV	Low oil alarm system contact	1	Low oil alarm system contact	
8	K1	Throttle magnetic valve	1		
7	SA	Relay	1	HFV4-012-1Z3G-DC12V	
6	X3	Electric start key	1	JK427	
5	X2	American type receptacle	1	RU-22 (125V,20A)	RICHBAY
4	X1	Three holes American type receptacle	1	LS-30R (125V,30A)	OLYMPIA
3	QF3	Four holes American type receptacle	1	LW-30R (125V,620V,30A)	OLYMPIA
2	QF2	Breaker	1	Single-stretch air switch (E63h-1/6)-F-30.0A	AIRPAX
1	QF1	Breaker	1	Single-stretch air switch (E63h-1/6)-F-30.0A	AIRPAX
		Breaker	1	Dual-stretches air switch (E63h-1/6)-F-50.0A	AIRPAX

12. WARRANTY

Kipor Power Equipment Limited Warranty

LENGTH OF WARRANTY:

Generators and/or batteries that are supplied with applicable products as standard, original equipment are covered by this warranty from the date of original retail purchase for a period of 2 years for residential use and 1 year for commercial applications. Units used in rental fleets or as demonstration models will be considered commercial usage. The warranty coverage is continual from the original date of purchase and does not restart upon the replacement of any part or complete unit. Individual parts replaced at any point during the warranty period are only eligible for warranty coverage for the balance of the original warranty period.

ELIGIBILITY:

To be eligible for warranty service, the product must be purchased in North America from an authorized Kipor dealer. This warranty applies to the original retail purchaser only, and is not transferable. Proof of purchase is required. Goods exported from North America as well as goods sold at auction are excluded from warranty coverage.

COVERAGE:

Parts, labor and regular shipping costs will be covered by Coast Distribution for any failure that is proven to be a failure in material or workmanship under normal use during the applicable warranty time period. Coast Distribution reserves the right to repair or replace these parts at its option. Coast Distribution may request defective parts to be returned. Anything replaced under warranty becomes the property of Coast Distribution.

TO OBTAIN WARRANTY SERVICE:

Contact any authorized dealer or contact our national customer service center at:
Phone 1-877-544-4449
Fax 1-800-263-0280
E-mail kiporcare@coastdist.com
If contacting us by fax or e-mail, be sure to include a description of the problem as well as all return contact info such as address, phone number, fax number, e-mail, etc. Engine serial number and proof of purchase is required.

EXCLUSIONS:

THIS WARRANTY DOES NOT EXTEND TO PARTS AFFECTED OR DAMAGED BY ACCIDENT AND/OR COLLISION, NORMAL WEAR, FUEL CONTAMINATION, USE IN AN APPLICATION FOR WHICH THE PRODUCT WAS NOT DESIGNED OR ANY OTHER MISUSE, NEGLECT, INCORPORATION OR USE OF UNSUITABLE ATTACHMENTS OR PARTS, UNAUTHORIZED ALTERATION, OR ANY CAUSES OTHER THAN DEFECTS IN MATERIAL OR WORKMANSHIP OF THE PRODUCT. THIS WARRANTY DOES NOT EXTEND TO NORMAL MAINTENANCE ITEMS SUCH AS SPARK PLUGS AND FILTERS.

DISCLAIMER OF CONSEQUENTIAL DAMAGE AND LIMITATION OF IMPLIED WARRANTIES:
COAST DISTRIBUTION DENIES ANY RESPONSIBILITY FOR LOSS OF TIME OR USE OF THE PRODUCT, TRANSPORTATION, COMMERCIAL LOSS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGE. ANY IMPLIED WARRANTIES ARE LIMITED TO THE DURATION OF THIS WRITTEN LIMITED WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages. Therefore, the above exclusions and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.